UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/126,559 | 07/30/1998 | DANIEL J. CAPON | 50130-E/JPW/ | 9053 |

7590 01/28/2002

ALBERT WAI KAT CHAN
COOPER & DUNHAM
1185 AVENUE OF THE AMERICAS
NEW YORK, NY 10036

| EXAMINER |
|---|
| BRUMBACK, BRENDA G |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1642 | |

DATE MAILED: 01/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/126,559 | Applicant(s) CAPON ET AL. | |
|---|---|---|---|
| | Examiner Brenda G. Brumback | Art Unit 1642 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 December 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,37 and 55-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 37, and 55-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Continued Prosecution Application*

1. The request filed on 12/03/2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/126,559 is acceptable and a CPA has been established. An action on the CPA follows.

2. The Preliminary Amendment filed 12/03/2001 is acknowledged. Claims 1, 37, and 55-58 were amended. Claims 1, 4, 8, 37, 40, and 55-58 are pending and under examination.

### *Claim Rejections - 35 USC § 112*

3. The rejection of claims 1, 4, 8, 37, 40, and 55-58 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is maintained.

Applicant's amendment to add a correlation step is noted; however, the correlation step fails to define what correlation is to be considered significant. The language "relates to susceptibility" is vague and indefinite because the nature of the relationship is not defined. Absent a clear correlation step delineating specifically how the results of the assay allow for the determination, the metes and bounds of the claimed invention cannot be determined and the claims are indefinite.

Applicant's amendment of the preamble to recite a method of determining susceptibility of HCV viral replication overcomes the portion of the rejection for indefiniteness of the preamble.

### *NEW GROUNDS OF REJECTION*

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 8, 37, 40, and 55-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capon et al. (U.S. Patent 5,837,464) in view of Lu et al. (Proc. Natl. Acad. Sci, 1996, of record as Exhibit 14 in Paper # 6) and Wang et al. (Journal of Virology, 1993, of record as Exhibit 21 in Paper # 6).

The claimed invention is drawn to a method for determining susceptibility of HCV viral replication to an anti-HCV drug comprising introducing a resistance test vector comprising a patient-derived HCV gene and an indicator gene into a host cell, culturing the host cell, and comparing expression of the indicator gene in the presence of an antiviral drug with expression in the absence of the drug. Dependent claims recite the additional limitations of the resistance test vector comprising genes encoding the C, E1, E2, NS2, NS3, NS4 or NS5 proteins of HCV; the patient-derived HCV gene comprising an internal ribosome entry site (IRES); and recite methods for determining HCV antiviral drug resistance in an infected patient comprising developing a standard curve of drug susceptibility for the antiviral drug and comparing the measured susceptibility to the standard curve as an indication of HCV antiviral drug resistance in the HCV-infected patient, or by comparing HCV antiviral drug susceptibilities in the same patient measured at a first and a later time as an indication of the development or progression of viral drug resistance in the patient.

Capon et al. teach a method for determining susceptibility of human immunodeficiency virus (HIV) viral replication to an anti-HIV drug comprising introducing a resistance test vector comprising a patient-derived HIV gene and an indicator gene into a host cell, culturing the host cell, and comparing expression of the indicator gene in the presence of the antiviral drug with expression in the absence of the drug. Capon et al. teach methods for determining HIV antiviral drug resistance in an infected patient comprising developing a standard curve of drug susceptibility for the antiviral drug and comparing the measured susceptibility to the standard curve as an indication of HIV antiviral drug resistance in the HIV-infected patient, or by comparing HIV antiviral drug susceptibilities in the same patient measured at a first and a later time as an indication of the development or progression of viral drug resistance in the patient (see

the abstract; column 7, lines 11-44; column 9, line 60, through column 10, line 45; column 12, lines 22-43; and columns 131-133, especially claims 1, 4, and 10). Capon teaches that the indicator gene may be either functional or non-functional (see column 12, lines 43-46). Capon teaches that development of resistance to antiviral drugs is also a problem encountered when treating viral infections other than HIV (see column 1, line 63, through column 2, line 38). Capon does not teach the method as used for determining susceptibility of HCV to an anti-HCV drug, does not teach the resistance test vector as comprising genes encoding the C, E1, E2, NS2, NS3, NS4 or NS5 proteins of HCV, and does not teach a patient-derived HCV gene comprising an internal ribosome entry site (IRES).

Lu et al. teach that effective antiviral drugs are needed for treatment of HCV-associated disease, but that development of such drugs has been hindered by the fact that HCV does not replicate in cell cultures to any appreciable titer (see page 1412, second column second paragraph).

Wang et al. teach methods for construction of vectors incorporating HCV-derived segments, which comprise an IRES and an indicator gene (chloramphenicol acetyltransferase [CAT] or luciferase [LUC]) (see pages 3338, *Materials and Methods*, first three paragraphs). Wang et al. teach that the HCV genome comprises genes encoding C, E1, E2, NS2, NS3, NS4, and NS5 proteins (see page 3339, Fig. 1). Wang et al. teach introduction of the HCV-derived segments into cells by transfection, incubation of the transfected cells in culture, and measurement of expression of the indicator gene as indicative of viral translation (see page 3339, column 2, third full paragraph; page 3340, column 2, last paragraph; and page 3341, column 1, first paragraph).

One of ordinary skill in the art at the time the invention was made would have found it *prima facie* obvious to have used the methods described by Capon et al. for determining susceptibility of a strain of HCV to an anti-HCV drug because Lu et al. teaches that new methods are needed and Wang et al. teach methods for constructing vectors incorporating HCV-derived segments.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and

is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 4, 8, 37, 40, and 55-58 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable either over claims 1, 4, 7-11, 13, 14, 46-49, 51-53, 70-73, and 78-83 of U.S. Patent No. 5,837,464 42 in view of Lu et al. and Wang et al. or over claims 1, 2, 18, 24-27, 30-42 of U.S. Patent No. 6,242,187 in view of Lu et al. and Wang et al., for the same reasons that were set forth *supra* under the rejection of the present claims under 35 U.S.C. 103(a).

***Conclusion***

6. No claims are allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Brumback whose telephone number is (703) 306-3220. If the examiner can not be reached, inquiries can be directed to Supervisory Patent Examiner Anthony Caputa whose telephone number is (703) 308-3995. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Examiner Brenda Brumback, Art Unit 1642 and should be marked "OFFICIAL" for entry into prosecution history or "DRAFT" for consideration by the examiner without entry. The Official FAX telephone number is (703) 872-9306 and the After Final FAX telephone number is (703) 872-9307. FAX machines will be available to receive transmissions 24 hours a day. In compliance with 1096 OG 30, the filing date accorded to each OFFICIAL fax transmission will be determined by the FAX machine's stamped date found on the last page of the transmission, unless that date is a Saturday, Sunday or Federal Holiday with the District of Columbia, in which case the OFFICIAL date of receipt will be the next business day.

Brenda Brumback
Patent Examiner